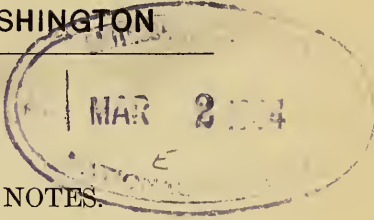


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APHID DESCRIPTIONS AND NOTES.

BY FREDERICK C. HOTTES.

In this paper the opportunity is taken to describe several species of aphids which are apparently new to science; to describe a new morphotype, and to add several species to the aphid fauna of Colorado. *Stegophylla quercicola* (Baker) is reduced to a synonym of *Callipterous? quercicola* Monell.

*Cinara winonkae*, new species.

ALATE VIVIPAROUS FEMALE.

*Size and general color.*—Average length from vertex to tip of anal plate 2.82, range from 2.78–2.90. General color of body light reddish-brown, lateral portions of abdomen with small dark brown areas, dorsum of abdomen with a few irregular small brownish spots. Cornicles situated on dark brown cones. First and second antennal segments concolorous with head, third and fourth segments with basal portions yellowish, dusky apically, fifth and sixth segments either uniform brown or with basal portions lighter. Beak with apical three segments brown, remaining portion yellowish mottled with brown. Femora yellowish with knees slightly brownish. Tibiae yellowish with apical regions dusky brown. Tarsi brown.

*Head and thorax.*—Head divided by a median longitudinal line. Proportional length of antennal segments as follows: III—37–40, IV—16–18, V—17–20, VI—14–17. Terminal processes inconspicuous, in some cases apparently absent.

Secondary sensoria distributed as follows: III—1–4, average 2 plus most common number 3; IV—0–1, generally 0; V—0–1, usually 1. Secondary sensoria distributed on apical half of third segment arranged in a straight row and usually more or less tuberculate. Hairs on third segment about two and one half times width of segment and only slightly inclined. Beak extending one-third length of abdomen. Eyes with well developed ocular tubercles. Stigma dusky-brown with a faint dusky suffusion beneath. Media very faint, twice forked, second fork of media closer to margin of wing than to first fork. Cubital and anal veins pronounced. Hairs on

hind tibiae two or more times width of segment and for the most part at right angles to segment. Hind tibiae averaging 2.00 long.

*Abdomen.*—Base of cornicles average .29 across, provided with one kind of hairs. Cauda and anal plate typical of genus.

This species was collected on the stems and trunks of *Arbor-Vitae* growing on the campus of Tulane University and in Audubon Park, New Orleans, Louisiana, December 31, 1931. All aphids were enclosed by fuzz sheds constructed of ants. These sheds were similar to those associated with *Cinara difficilis* Hottes and Frison. This species may be distinguished from *Cinara difficilis* by the lighter colored legs, by the smaller number of secondary sensoria on the third antennal segment, the shorter beak, the absence of a subcostal vein and by the twice forked media. The unusually short or absent terminal process is the most outstanding characteristic of this species and separates it at once from most if not all species belonging to the genus.

*Holotype.*—Alate viviparous female, deposited in the United States National Museum. Collection data as above. Apterous viviparous material is at hand, unfortunately it is too poorly mounted to describe. However, a slide of apterous viviparous females has been deposited in the United States National Museum.

#### ***Aphis kachena*, new species.**

##### ALATE VIVIPAROUS FEMALE.

*Size and general color.*—Average length from vertex to tip of anal plate 1.44 (range 1.14–1.71). Head and thorax dark dusky-brown with the margins of some sclerites yellowish, ground color of abdomen yellowish-green with brownish markings as follows: anterior portion of abdomen with two broken bands of brown across dorsum, posterior to these there is a large brownish patch which extends to the posterior portion of the abdomen. This patch usually has irregular margins and may contain several yellowish colored islands. The lateral margins of the abdomen are indicated by dark brown areas. Cornicles dusky-brown at base shading to yellowish-green apically. Cauda and anal plate dark brown. Antennae dark brown. Femora yellowish at base, remaining portion brown. Tibiae yellowish-brown, darker apically. Tarsi dark brown. Stigma brownish, veins brown with just a suggestion of a fuscous border. Beak dark brown with the segments clearly separated by yellowish bands.

*Head and thorax.*—Antennal segments with the following proportional lengths: III—.31–.43, average .36, IV—.16–.20, average .18, V—.11–.14, VI—.07–.10 plus .34–.41, average .38. Secondary sensoria present on segments three and four and usually on five. Sensoria with wide rims irregularly arranged on segments, distributed as follows: III—23–45, average 32, IV—5–14, average 10, V—0–3, average 1 plus. All antennal segments setosely imbricated. Hair on antennae fine, shorter than width of segment. Beak reaching mesothoracic coxae. Prothorax with a pair of lateral tubercles. Position of second fork of media not constant but usually closer to margin of wing than to first fork.

*Abdomen.*—All segments anterior to cornicles with small peg-like tubercles, second segment posterior to cornicles with peculiar inwardly curved tubercles. Brownish lateral areas with large circular, glandular areas. Hairs on abdomen arising from whitish tuberculate areas. Brownish areas suggestive of surface of cornicles. Cornicles .09–.11 in length with slightly developed rims, similar in shape and surface to those of *Aphis bakeri* Cowen. Cauda with two hairs on a side .09–.11 in length, not constricted, rarely extending much if any beyond tip of anal plate.

## APTEROUS VIVIPAROUS FEMALE.

*Size and general color.*—Average length from vertex to tip of anal plate 1.73 (range from 1.57–2.00). Head, thorax and abdomen dark green, heavily mottled with dark brownish-black, the patches on the dorsum being more or less confluent. The segments are indicated laterally by brownish patches and many smaller brown areas. First and second antennal segments concolorous with head, third and fourth segments yellowish, fifth antennal segment yellowish at base, remaining portion dusky, sixth segment dusky. Legs yellowish-brown with the knees and apical portions of tibiae and all of tarsi dusky-brown. Cornicles yellowish-green. Cauda and anal plate brown. Head and appendages.—Proportional lengths of antennal segments as follows: III—.16–.20, IV—.07–.11, V—.07–.09, VI—.06 plus .20–.29, average .25. There are no secondary sensoria. There is a distinct tendency for the articulations between the third and fourth segments to be faintly indicated so that the antennae appear to be only five segmented. The beak reaches midway between the meso and metathoracic coxae. Lateral tubercles on abdomen usually not visible, when present minute. Cornicles as in alate viviparous female. Head, thorax and abdomen (particularly the dark areas) setosely imbricated.

This species may be collected on the flower heads of several species of Indian Paintbrush *Castilleja* species, the floral parts of which must be torn apart before the aphids are rendered visible.

This species is closely allied to *Aphis bakeri* Cowen from which it may be quickly separated by the dark colored apterous forms, the larger number of secondary sensoria on the third antennal segment; the comparatively shorter cauda and the larger lateral glands on the abdomen.

*Holotype.*—Alate viviparous female (specimen mounted on back with spread wings and lacking left antenna, mounted on slide with other alate and apterous viviparous females). Skyway, Colorado, July 18, 1933. *Morphotype.*—Apterous viviparous female, Skyway, Colorado, same data as holotype. Type slides deposited in the United States National Museum.

***Aphis pawneepae*, new species.**

## APTEROUS VIVIPAROUS FEMALE.

*Size and general color.*—Length from vertex to tip of anal plate 1.50–1.64, average 1.57. Average width of head .45. Head and thorax brown, remaining portion of body reddish-brown. Antennae dusky-brown, base

of third segment lightest, apical antennal segments progressively darker. Legs brown with knees and apical portions of femora and tarsi dusky. Cornicles brown. Cauda with a V-shaped yellowish area at base, remaining portion brown. Beak brown with apical portion dusky.

*Head and appendages.*—Antennae either five or six segmented. When six segmented with the following proportional lengths: III—.26-.29, IV—.11-.14, V—.10, VI—.10 plus .20. Secondary sensoria absent, all antennal segments imbricated. The beak reaches mid-way between the meso and metathoracic coxae.

*Thorax and abdomen.*—Prothorax with a pair of large lateral tubercles. Cornicles .14-.19, average length .16, poorly imbricated without flange, tapering slightly towards apex. Cauda from .11-.14 long with sides straight or with just a suggestion of a constriction, sides with from five to eight hairs.

ALATE VIVIPAROUS FEMALE.

*Size and general color.*—Length from vertex to tip of anal plate 1.21-1.60, average 1.37. Average width of head .44. Head and thorax dark dusky-brown to black. Abdomen with lateral patches of darker brown. Antennae uniform dusky-brown. Femora yellowish-brown at base, remaining portion dark brown. Tibiae dusky-brown with the apical portions darker. Tarsi dark brown. Cornicles dark dusky-brown. Cauda dark dusky-brown except for V-shaped basal portion. Anal plate dark brown. Stigma dusky, veins dark brown and bordered with fuscous. Accessory radial thickening present.

*Head and thorax.*—Proportional lengths of antennal segments as follows: III—.17-.36, average .27, IV—.11-.16, average .14, V—.13-.16, average .15, VI—.10 plus .19-.21. Secondary sensoria usually confined to basal half of third segment, ranging in number from two to five, average three. Most common number two. All segments imbricated. The beak reaches just beyond the coxae of the metathoracic pair of legs. Prothorax with a pair of unusually large lateral tubercles. Second fork of media closer to margin of wing than to first fork, all veins ending in fuscous areas. All segments of abdomen anterior to cornicles with a pair of lateral tubercles, the first pair of which is largest. There are two large lateral tubercles posterior to cornicles. Cornicles .14-.19, average .16 long, without flange, in shape similar to those of apterous viviparous female. Cauda .11-.14 long with about seven hairs on a side. Only the extreme tip extending beyond tip of anal plate. Cauda not constricted. Anal plate quite hairy.

Stem mothers of this species are quite similar to apterous viviparous females but are somewhat larger. Stem mothers of this species were collected on the stems of red bud *Cercis canadensis* L. All other forms of this species have been collected in small grass huts constructed by ants. (*Crematogaster lineolata* Det. Burrill). These huts in the case of the specimens collected in Decatur were just at the surface of the ground encircling the trunks of small seedling trees.

This species is very closely allied to *Aphis caliginosa* Hottes and Frison, from which it may be separated by the following characteristics: in *Aphis caliginosa* the secondary sensoria of the alate viviparous females are

usually confined to the apical half and always reach to the apical end of the segment. In *Aphis pawneeae* the secondary sensoria never extend to the apical end and are confined to the basal half of the segment. The minimum number of sensoria in *Aphis caliginosa* being the very maximum in *Aphis pawneeae*. The tibiae in *Aphis caliginosa* are yellowish with the apical portions darker. In *Aphis pawneeae* the tibiae are brown with apical portions darker. The cornicles of *Aphis pawneeae* are longer than those of *Aphis caliginosa*.

*Holotype*.—Alate viviparous female, Decatur, Illinois, June 9, 1933.

*Morphotype*.—Apterous viviparous female, Decatur, Illinois, June 9, 1933.

*Morphotype*.—Apterous viviparous stem mother, Decatur, Illinois, May 19, 1933.

*Morphotype*.—Oviparous female, Osage City, Missouri, August 29, 1931, by A. C. Burill, whose assistance and aid in collecting the first material of this species I greatly acknowledge. All types were taken on *Cercis canadensis* L. All types deposited in the United States National Museum.

### **Amphorophora pawtincae, new species.**

#### ALATE VIVIPAROUS FEMALE.

*Size and general color*.—Length from vertex to tip of anal plate 2.86–3.78, average 3.40. Width of head through the eyes .64–.69, average .66. Color of head, thorax and abdomen light pea-green with brownish markings as follows: ocelli outlined with brown, posterior portion of head, anterior portion of mesothorax slightly brown, apical three fourths of cornicles yellowish-brown, basal portion concolorous with abdomen, anal plate concolorous with abdomen. Cauda slightly dusky due to dusky colored setaceous imbrications. First antennal segment concolorous with head at base, remaining portion brownish, second antennal segment brownish, third antennal segment yellowish at the extreme base, remaining portion brown with apical portion darker, remaining antennal segments progressively darker brown with their apical portions still darker brown. Femora green with apical halves shading to brown. Tibiae light brown with apical portions dark brown. Tarsi brown.

*Head and thorax*.—Proportional lengths of antennal segments as follows: III—1.00–1.20, average 1.11, IV—.94–1.14, average 1.02, V—.72–.89, average .82, VI—.14–.21, average .17 plus 1.21–1.40, average 1.32. Secondary sensoria irregularly arranged but confined very largely to one side of segment, ranging in number from 29 to 36, average 33. Clubbed hairs on antennal segment III about two-thirds width of segment in length. Third antennal segment lightly imbricated, remaining antennal segments conspicuously imbricated. Beak reaching to mesothoracic pair of coxae or a little beyond. Stigma long and sharply pointed, accessory radial thickening very faintly indicated. Veins dark brown, second fork of media closer to first fork than to margin of wing.

*Abdomen*.—Length of cornicles .43–.50, average .47. Cornicles distinctly swollen near middle with a well developed rim. Imbrications on surface of cornicles extremely light. Region of cornicles adjacent to flange some-

what wrinkled but not reticulated. Length of cauda .43-.50, average .47, not constricted with from three to six hairs on a side.

This species can not be keyed further than couplet twenty-three in Mason's (Key to alate viviparous females) Revision of the *Genus Amphorophora* for the antennae are not tuberculate nor are the sensoria in a straight row. From *Amphorophora rossi* Hottes and Frison this species differs in larger number of sensoria on antennal segment three, longer cornicles, differently colored antennae, length of beak and in the shape of the cauda.

This species was collected on the stems, leaves and flowers of *Primula parryi* Gray.

*Holotype*.—Alate viviparous female, Skyway, Colorado, July 12, 1933, on Cottonwood Lake Trail. Deposited in the United States National Museum.

### **Dactynotus wakibae**, new species.

#### ALATE VIVIPAROUS FEMALE.

*Size and general color*.—Length from vertex to tip of anal plate 2.04. Head brown with antennae and lateral margins darker. Thorax brown with the thoracic lobes darker. Abdomen brown except for the following: a narrow interrupted greenish band between first and second abdominal segments, one or two small transverse greenish spots on the dorsum, and the small greenish areas around the base of the cornicles. The brown of the dorsum extends laterally and overlaps the ventral surface somewhat. The venter is distinctly lighter than the dorsum except for a median dark brown area extending posteriorly from a point in line with the base of the cornicles. Cauda brown. Cornicles brown, darker basely. First and second antennal segments more or less concolorous with head, remaining segments more or less brown except for portion of third segment proximal to first sensorium and extreme tip of segment. Femora of all legs shading gradually from light yellowish at the base to brown apically. Tibiae light yellowish-brown shading to brown apically. Tarsi brown.

*Head and appendages*.—Antennal tubercles gibbous but not markedly so. Secondary sensoria confined to third segment, arranged in a straight row, numbering ten, in size minute. All antennal segments imbricated. At side of primary sensorium on sixth antennal segment there are five marginal sensoria. On the dorsum of head near the junction of head and thorax there are two small tubercles. Vertex of head with two short hairs, gibbous portions of antennal tubercles with two or three hairs. Hairs on antennae exceedingly fine and short, varying in length from one-fourth to not more than half the width of segment. The beak reaches just beyond midway between the pro and mesothoracic coxae.

*Thorax*.—Prothorax with very small, rather inconspicuous lateral tubercles. Stigma of forewings dark brown, accessory radial thickening present. Veins dark brown with just a suggestion of a brownish border. All femora free from sensoria. Hairs on femora exceedingly short and fine, entire surface of femora imbricated. Hairs on tibiae short and fine, longer and coarser on proximal portion.

*Abdomen.*—Cornicles .53 long, sides straight except for reticulated portion which is ever so slightly constricted. Apical portion of cornicles with a flange, reticulated portion of cornicles equal to about one-fifth total length, there being about four rows of closed cells. Portion of cornicles not reticulated distinctly imbricated. Cauda .21 long, constricted near middle, rounded at apex with two long inwardly curved hairs on each side distal to constriction. Hairs on abdomen similar to those on antennae except for those on posterior parts of abdomen, which are more nearly normal.

## APTEROUS VIVIPAROUS FEMALE.

*Size and general color.*—Length from vertex to tip of anal plate 1.76. Head and thorax lighter than similar parts of alate form and with a distinct greenish tinge. Antennal segments progressively darker from proximal portion of third antennal segment. Abdomen dark brown, color appearing as a dark brown patch surrounded by a lighter brownish-green area which in turn is surrounded by dark brown which extends over the sides of the abdomen and covers up part of the venter. Cornicles, less dark than those of apterous viviparous female, arising from small light areas. Legs similar to those of alate female.

Proportional lengths of antennal segments as follows: III—.50, IV—.37, V—.37, VI—.14 plus .69. Length of cauda .21. Length of cornicles .50. There are no secondary sensoria. Cornicles not reticulated.

This species may be considered by some to belong to the *Adactynus*=*Macrosiphum* because of the not too gibbous antennal tubercles. As a species, however, it shows decided affinities with *Dactynotus cerasi* (Fab.). From *Dactynotus cerasi* (Fab.) alate viviparous females of this species differ in that all of the marginal sensoria are of one size, the presence of tubercles between head and thorax, the reticulated cornicles, the shorter beak and the large brown spot on the venter. The apterous viviparous of *A. wakibae* differ from similar forms of *A. cerasi* most distinctly by not having marginal sensoria. From *D. pseudosolani* (Theobald) this species may be separated in apterous forms by the absence of marginal sensoria, by the absence of clubbed hairs on tibiae, and more numerous hairs on femora. Alate forms differ from *D. pseudosolani* by reticulated cornicles and the greater intensity of imbrications on various parts of the body and many other characteristics.

*Holotype.*—Alate viviparous female, Skyway, Colorado, August 6, 1933, on *Pedicularis canadensis* L.

*Morphotype.*—Apterous viviparous female same data as holotype.

Holotype and morphotype deposited in the United States National Museum.

The following species have thus far not been recorded from Colorado. All of them were taken near Skyway, Colorado, on Grand Mesa: *Dactynotus masoni* (Knoulton 1928), *Pemphiglachnus kaibabensis* Knoulton, *Aphis nycialis* Hottes and Frison, and *Saltusaphis elongata* Baker.

Alate viviparous females of *Adactynus macrosiphum* (Wilson) were taken near Mesa, Colorado, June 30, 1933, on *Amelanchier*. Thus far only

apterous females have been known. The following salient features of alate forms are worth noting: third antennal segment with from 29-44 secondary sensoria, average number 35 irregularly arranged but confined to one side of segment. Sensoria irregular in size but in general rather small. Second fork of media closer to margin of wing than to first fork. Anal and cubital veins very dark brown and heavily bordered, other veins dark brown and less conspicuously bordered.

*Morphotype.*—Alate viviparous female data as above deposited in the United States National Museum.

Professor J. J. Davis has kindly made Monell's slide of *Callipterous ? quercicola* Monell available for me for study. Under one cover glass I find two male specimens of the species now known as *Stegophylla quercicola* (Baker) and two specimens of *Colopha graminis* Monell. The species described by Baker now becomes a synonym of the species described by Monell.